WEST VIRGINIA
SCHOOL
of
OSTEOPATHIC
MEDICINE

400 NORTH LEE STREET
LEWISBURG, WEST VIRGINIA 24901

AREA 304
645 6270

MS 0934

April 28, 1980

Michael A. Lamastra
Materials Licensing Branch
Division of Fuel Cycle & Material Safety
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

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Dear Mr. Lamastra:

Enclosed you will find your letter dated March 21, 1980, and refers to the Control No. 02950.

1. Enclosed you will find the names of the individual users and their training. (Enclosure I).

2. The duties and responsibilities of the Radiation Protection Officer are:

   a. To ensure that calibration of survey and monitoring equipment is done at six month intervals.

   b. Conduction of radiation surveys in vicinity of radioactive sources.

   c. Conduction of contamination control surveys at all locations where radio-isotopes are used or stored.

   d. Inspection of facilities and equipment where radioactive materials and machines are used.

   e. Review of all requisitions for procure-ment of radioactive material.

   f. Management of waste disposal service.

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g. Coordinating the film-badge service and maintaining personnel exposure records.

h. Preparation of an annual report for the Committee.

i. With advice and approval of the Committee, preparation and maintenance of Radiation Safety Manual.

j. Experiment review by the Committee.

3. Bioassays: Where necessary or desirable bioassays will be performed by the users to determine the extent of an individual's exposure to concentrations of radioactive material. Bioassays may be required if the isotopes physical or chemical form, or if conditions present an opportunity for uptake by the body by way of ingestion, inhalation or absorption. Such bioassays may include, but are not limited to uremic analysis or whole body counting. "The exposed individual must cooperate in any and all attempts to evaluate his/her exposure."

   Individuals involved in operations which utilize 10 mCi or greater of hydrogen-3 or greater of hydrogen-3 as organic compounds; 100 mCi amounts or greater of hydrogen-3 as inorganic compounds will prefer bioassays within one day following a single operation at daily intervals for censured operations.

   Bioassay results should be sent to the Radiation Protection Officer.

4. Individuals using phosphorus-32 should observe the following guidelines:

   a. Users should wear a film-badge and a ring-badge (for 1mCi or more).

   b. In advance, of the work, a full understanding of safety precautions must be taken.

   c. The procedure should be well outlined in writing (the amount of detail commensurate with the hazard).

   d. In some cases, before the procedure is actually performed with radiation it should be given a dry run, so as to preclude slip-ups or unexpected complications.

e. Wear a lab coat and rubber and/or plastic gloves to protect personnels clothing, hands from contamination. Use the laboratory survey instrument on hands, shoes and clothing, before leaving the work area.

f. All work surfaces and storage areas should be properly covered. Absorbent mats or paper with plastic back and absorbent paper front should be used.

g. All handling of radioactive material and procedures should be done behind plexiglass or other suitable shielding.

h. Safety glass, or goggles should be worn with procedures involving 10 or more millicuries.

i. A finger-type monitor should be worn for procedures involving 1 or more millicuries.

6. If the radioactive material is delivered during off-duty hours, the Security Officer will take the package to the Radiation Safety Officer. The package will be placed in the receiving room. The Security Officer will then call the Radiation Protection Officer (office - Ext. 226 or his home - 645-7667), and inform him that the package was delivered, its arrival time and where it is located in the RSO (locked cabinet or refrigerator).

7. The packages will be monitored as designated in Section 20.205 10CFR 20 within three hours after delivery. Radioactive solu ions inadvertently stored upside down may gradually leak and cause contamination problems. Therefore, the following steps will be followed:

a. Examine the integrity of the package, then smear test the package surface for removable contamination.

b. For hard beta and gamma emitters, measure the radiation levels in mrcm/hr. at 3 ft. from the surface of the package (transport index) and compare with the transport index stored in the package. Measure radiation level at surface of package.

c. For liquid or powder shipments, place the package in a vented hood. Plastic gloves must be worn when processing the package.

d. Open the package and check for possible breakage or seals or containers, loss of liquid or change in color of absorbing material.

e. Verify that the contents of the inner package agree in name and quantity with the packing slip.

f. For hard beta and gamma emiters, measure the radioactive level of the unshielded container in mrcm/hr. Use shielding if necessary.

g. Smear test the inner contents of package.

h. Complete the appropriate forms.

i. Record the isotope, quantity and location in inventory log.

8. In regard to our personnel training program:

a. Periodically (every 6-12 months) the RPO will give a short training and orientation lecture in the proper procedures for the use of radioactive material. This lecture may be used to supplement on-the-job training or formal course work.

b. Instruction for auxillary personnel will be given initially and thereafter annually by the RPO. An intergal part of the instructions will be the familiarization of the employee with the radiation safety guide. Additional special instructions will be given to:

1. Animal Caretakers: Personnel caring for animals containing radioactive material will be given instructions concerning the handling of animals, waste, carcases and the cleaning and decontamination of animal cages.

2. Female Radiation Workers: All female radiation workers must receive special instructions concerning possible health risks to children of women exposed to radiation during pregnancy. Female radiation workers shall report confirmed pregnancies at earliest possible date to their supervisor and the RSO. Such employees shall, at the discretion of the RSO, be immediately transferred to duties involving negligible or no radiation hazard to the developing embryo or fetus.

3. Maintenance and Construction Workers: Work requests for maintenance or construction in areas involving radiation or contamination, require approval of the RPO. It must be indicated on the work order that the intended work involves possible exposure to radiation, is in an area where radioactive materials are used or stored, or is in an area where radiation producing machines are operated. A member of the laboratory must be present to provide specific instructions.

4. Custodial Personnel: The RPO will give instructions on cleaning radioisotope laboratories. The instructions are that custodians:

   a. Not enter a laboratory which has a "Caution-Radiation Area", "Caution-High Radiation Area", "Caution-Airborne Radioactivity Area" sign posted on the door without the approval of RPO.

   b. Not clean bench or table tops or move any item on them.

   c. Not sweep the floors, but use a dry mop.

   d. Empty only wastepaper baskets.

   e. Not ear, drink, smoke or apply cosmetics in radioisotope laboratory.

   f. Meet with the the authorized user prior to entering the laboratory for first time, so that he may inform them of any precautions that must be taken.

   g. Get permission to wash and wax laboratory floors from the authorized user. The user must insure the floors are free from contamination.

Appendix I

RELATIVE HAZARDS OF INTERNAL EMITTERS

Selected radioisotopes grouped according to relative radiotoxicity, with the amounts considered as low, intermediate, or high level in laboratory practice.

I. Slight Hazard

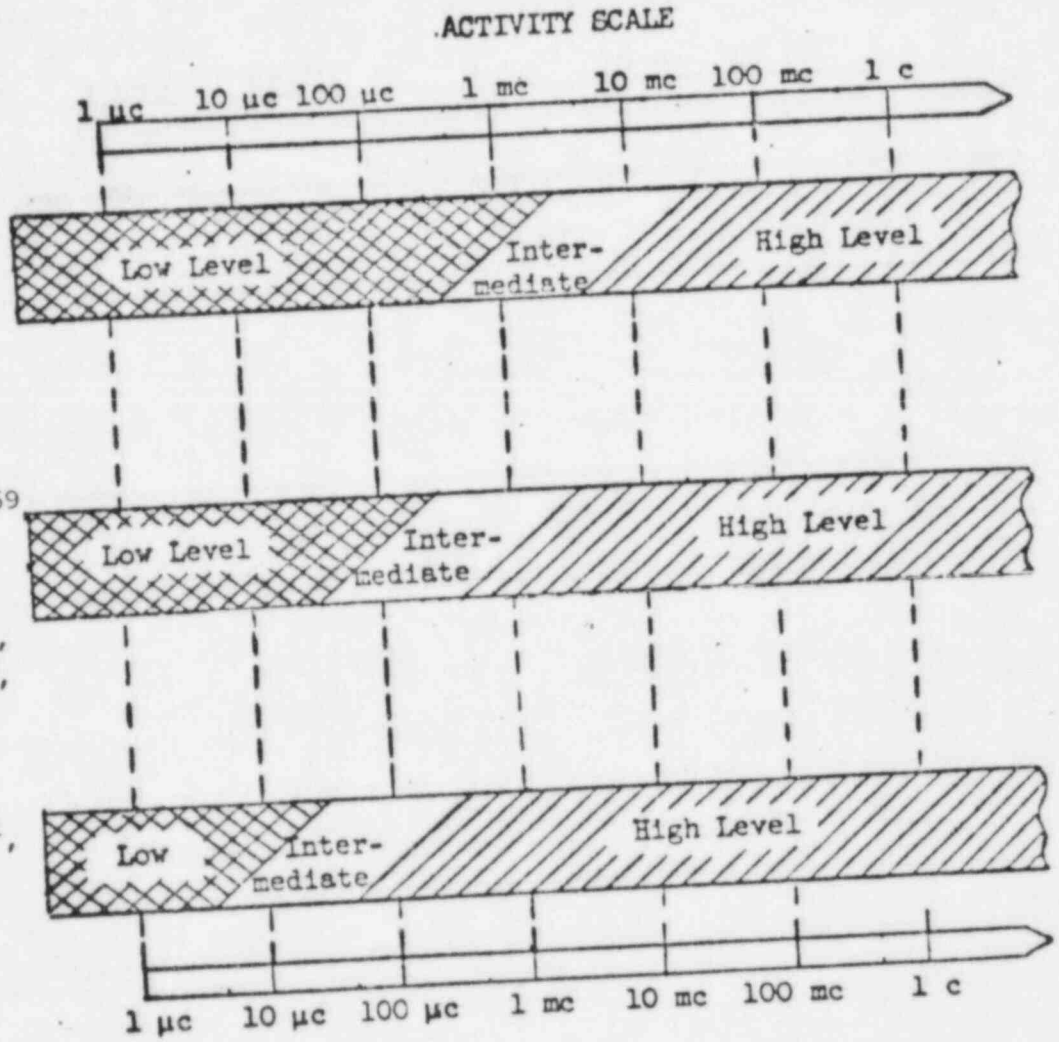
Na^{24}, K^{42}, Cu^{64}, $*Mn^{52}$, $*As^{76}$, As^{77}, Kr^{85}, $*Hg^{197}$

II. Moderately Dangerous

H^{3}, C^{14}, $*Na^{22}$, P^{32}, S^{35}, Cl^{36}, $*Mn^{54}$, $*Fe^{59}$, $*Co^{60}$, Sr^{89}, $*Cb^{95}$, $*Ru^{103}$, Ru^{106}, Te^{127}, Te^{129}, I^{131}, $*Cs^{137}$, $*Ba^{140}$, $*La^{140}$, Ce^{141}, Pr^{143}, $*Nd^{147}$, $*Au^{198}$, $*Au^{199}$, $Hg^{203,205}$

III. Very Dangerous

Ca^{45}, Fe^{55}, Sr^{90}, Y^{91}, $*Zr^{95}$, Ce^{144}, Pm^{147}, Bi^{210}



ACTIVITY TO BE HANDLED IN THE LABORATORY

From: K. Z. Morgan ORNL

NOTES: 1. Effective radiotoxicity is obtained from a weighting of the following factors:

(a) Half-life,
(b) Energy and character of radiations,
(c) Degree of selective localization in the body,
(d) Rates of elimination,
(e) Quantities involved and modes of handling in typical experiments.

2. The slant boundaries between levels indicate borderline zones and emphasize that there is no sharp transition between the levels and the associated protection techniques.

3. The principal gamma emitters are indicated by asterisk (e.g., $*Na^{24}$). The above system does not apply to the hazards of external irradiation.

9. Emergency Procedures

A. Introduction

Emergencies resulting from accidents in laboratories working with radioactive materials will range from simple spills of small amounts of radioactive materials, where no serious contamination problem results, to major disasters occurring from explosions, fires, or natural phenomena. Correspondingly, the hazards resulting from such accidents will cover the range of situations from no hazard whatsoever to very serious situations involving extreme radiation hazards and bodily injury or both. In view of the complicating factors that may arise during such emergencies, simple rules of procedure cannot be set down covering all situations of radiation danger. However, in any emergency primary concern must always be the protection of laboratory personnel from radiation hazards. Second should be the confinement of the contamination to the local area of the accident, if this is possible.

Spills - No Airborne Contamination

1. Notify all other persons in the room at once.

2. Monitor the skin and clothing of persons near the spill.

   (a) If spill is on skin, flush thoroughly. Proceed according to "Decontamination of Personnel".

   (b) If spill is on clothing, discard outer or protective clothing.

3. Block off the contaminated area. Permit only the minimum number of persons necessary to deal with the spill into the area. This prevents spread of the contamination. In case the spill causes high radiation hazard ($\geq$ 100 millirem/hr. to the whole body), vacate the room immediately, close all doors and keep everyone out until the RSO arrives.

4. Confine the spill.

   (a) Put on protective gloves and lab coat. Use shoe covers if floor is contaminated.

   (b) Drop absorbent paper on a liquid spill.

   (c) Dampen a dry spill; take care not to spread the contamination.

   (d) See "Decontamination of Laboratory".

5. Notify the RPO, extension 226 or the Medical School Operator; the RPO will provide supervision and monitoring of the cleanup.

6. DO NOT CALL HOUSEKEEPING TO CLEAN UP RADIOACTIVE SPILLS. The person involved is responsible for the cleanup.

Airborne Contamination (Dust, Vapors, Gases)

1. Evacuate the laboratory immediately. If time permits, hold your breath and shut off the source of contamination. (Example: If radioactive gas is leaking from a cylinder, close the cylinder valve if you can).

2. Shut all doors to the laboratory.

3. Call Physical Plant and have the air conditioning shut down in your area. Notify the RPO, Ext. 226 or the Medical School Operator. The RPO will supervise re-entry into the contaminated area.

4. Post a guard to insure that no one re-enters the laboratory and to keep the area clear of spectators.

5. Assemble and monitor all persons who were in the laboratory at the time of accident. The place of assembly should be near the contaminated area in order to reduce the spread of contamination. Proceed as in "Decontamination of Personnel".

Injury to Personnel

1. Wounds

   (a) If contamination is found in open wounds, flush the wound immediately with running water while spreading the edges of the gash.

   (b) In cases where isotopes have accidentally been released into a finger or other extremity by a hyperdermic, induce the wound to bleed by "milking" it as a cleansing action in addition to the running water.

   (c) If contamination is found in the eyes, flush the eyes with running water.

2. Ingestion of material

   (a) If radioactive material has been taken into the mouth, it should be assumed that some of the material has been ingested.

(b) Induce vomiting by placing a finger well back in the throat.

(c) Have person drink a pint of water and induce vomiting again.

3. Of course, if the injury is serious, take the person to the "Emergency" section of the hospital at once.

4. Report ALL radiation accidents (wounds, overexposure, ingestion, inhalation) to the RPO as soon as possible.

Fire

1. Notify all persons in the immediate area.

2. Activate nearest fire alarm signal.

3. Notify Medical School Operator, give location of fire or smoke.

4. Attempt to put out fires if radiation hazard is not serious.

5. Notify the RPO, extension 226.

6. Follow instructions given by Medical School fire emergency plans.

9. Decontamination Procedures

B. Decontamination of Personnel

The object of personnel decontamination is to reduce radiation exposure promptly, minimize absorption of radionuclides into the body, and keep localized contamination from spreading. A survey instrument is absolutely necessary.

If a person is found to have radioactive contamination on their clothing or bodies, the following steps should be taken:

Skin

1. Remove any clothing found to be contaminated before determining levels of skin contamination. Generally, levels below 0.1 mrem/hr. present a minimal hazard, but still should be removed if possible.

2. Specific hot spots or areas on the skin should be located with a survey meter. These should be cleaned up so as to prevent the spread of contamination to clean areas of the body.

3. Ordinarily, soap and lukewarm water (or detergent) will remove most of the contamination.

   (a) Wash for 1-2 minutes, rinse and dry the areas. Pay particular attention to the hands and fingernails. Monitor with a survey meter. Repeat if contamination still present.

   (b) If contamination still present, wash again using plenty of soap and a soft brush. Apply only light pressure to the brush. Rinse, dry and resurvey. Repeat if contamination still present.

   (c) Take care to keep radioactivity from being washed into any skin breaks near the contaminated area. Covering the skin break with a sterile bandage will help.

   (d) Even if contamination still persists, these efforts should be halted before the skin becomes reddened and irritated.

   (e) ALWAYS contact the RPO, extension 226 for advice and final monitoring.

4. If contamination is widespread over the body, shower with soap and water, dry and repeat survey. If contamination is still widespread, shower with scrubbing, dry and resurvey. If contamination still exists, select the most highly contaminated areas and proceed as in 3(a) and 3(b). Never let the skin become irritated.

5. DO NOT use organic solvents. These may only increase the probability of radioactive material penetrating the skin.

6. When decontamination is completed, apply lanolin or hand cream to prevent chapping.

7. Notify the RPO if any difficulty is encountered in removing the contamination or if assistance or monitoring is desired. The RSO should provide final monitoring.

Hair

1. If the hair is contaminated, try up to three washings with liquid soap and rinse water. Use towels to keep water from running onto the face and shoulders.

2. Notify the RPO if any difficulty is encountered in removing the contamination or if assistance or monitoring is desired. The RSO should provide final monitoring.

Clothes

1. Contaminated clothes (or shoes) should be removed from the body to prevent further spread of the contamination. Place these items in plastic bags or containers.

2. After necessary body decontamination has been accomplished, put on protective gloves and lab coat (or surgical gown) and rinse the clothing in a Radioactive Waste Sink (providing the sink is less contaminated than the clothing).

3. Recheck the surface of the garments with a survey meter. Maximum permissible contamination is:

   (a) 1 millirem/hour (or 1000 CPM with a GM survey meter) for isotopes in Group I and II Appendix I.

   (b) 0.1 millirem/hour (or 100 CMP) for isotopes in Group III (Appendix I). If clothing reads less than these limits, it may be released directly to the laundry.

4. If several washings still are not able to lower the contamination then either hold it for decay if the half-life is short, or treat it as solid radioactive waste.

5. The RPO will provide final monitoring and advice.

9. Decontamination of Laboratories

C. This job will be much easier if appropriate planning and precaution are made ahead of time.

1. The general procedure is to confine the radioactive material as much as possible, and prevent spread to other areas.

2. Prepare yourself for this job by putting on protective gloves, lab coat or surgical gown, and shoe covers if the floor is contaminated.

3. A survey instrument is a must; otherwise you are only guessing where the contamination lies.

4. First remove the gross contamination caused by the spill; start at the edges of the contaminated area and work inward. If a large amount of gamma or high energy beta emitter has

been spilled, manipulate the cleaning rags or towels with long forceps or tongs; this will significantly reduce hand exposure. Once a cleaning rag has become contaminated, it should be disposed of rather than re-used.

5. After removing spilled liquids or other material, soap and water should usually be tried first to remove the remainder of the contamination.

6. All waste material should be placed in a plastic bag or other container to prevent recontaminating the area. The waste must eventually be sealed in plastic bags as described in Section 11, "Radioactive Waste Disposal".

7. The individual involved in the spill is responsible for the clean-up. DO NOT CALL HOUSEKEEPING TO CLEAN-UP RADIOACTIVE SPILLS.

8. The RPO will advise in the clean-up procedures and will provide final monitoring. Call Ext. 226 or the Medical School Operator.

10. The name and home phone number (Dr. Charles M. Paroda; Office - Ext. 226, Home - 645-7667) will be posted on the laboratory door to facilitate contact in case of emergency. The emergency procedures described in Item 9.A. will be posted in each laboratory.

11. PRECAUTIONS WITH TRITIUM

Tritium emits a very weak beta whose maximum energy is only 18 Kev. This is too weak to penetrate the outer layer of skin and this is not an external hazard as would be P-32 or Co-60, for example. Also, because of its low energy, the beta will not penetrate any conventional monitoring instrument; therefore these instruments are useless for detecting tritium. When tritium enters the body, however, there is no outside layer of skin to act as a shield, so all the energy of these betas may now be absorbed in living tissue with consequent radiation exposure.

Tritium is commonly present as tritium gas (HT or T_2) or as tritium oxide (HTO or T_2O). In most instances, a container of tritium gas will also have tritium oxide associated with it. In general, tritium gas in the elemental form does not present as great a hazard as does tritium oxide; this is because the body will absorb tritium oxide at a very high rate, while elemental tritium gas is absorbed considerably slower. Since tritium is an isotope of hydrogen, it is readily incorporated into the molecular structure of most organic materials, including you. Thus there is a need to use safety measures even with tritium.

Personnel working with tritium oxide should be very cautious with procedures which might lead to exposure to the vapor. This applies to skin exposure as well as to exposure by inhalation, since as much tritium oxide may pass through the total skin area of man per unit time as through the lungs. It has been found that man may absorb through the respiratory system as much as 98 to 99% of the activity inspired. Once tritium is absorbed into the body, the isotope becomes uniformly distributed throughout the body fluids in about 2 hrs. The biological half-life of tritium in the body is about 12 days; the radiological half-life is about 12.4 years.

The Maximum Permissible Body Burden of tritium is about 1 millicurie. This means that if sufficient tritium is continually taken into the body to maintain 1 millicurie in it throughout the year, then by the end of the year the body will have received a maximum permissible exposure of 5 rem. Also calculations have indicated that a single intake by inhalation of soluble material containing about 25 millicuries of tritium will deliver the Maximum Permissible Exposure of 5 rem in a year to the total body.

Rough calculations indicate that a single inhalation of 10 to 12 curies of tritium oxide would possibly result in a lethal exposure over a period of approximately one week. Although it is highly unlikely that anyone at WVSOM Medical School will be in a situation where intakes of this size are possible, these calculations do serve to point out the magnitude of the potential problem.

Particular hazards are encountered with H-3 labeled nucleic acids, and to a certain extent, with all other labeled nucleic acids. Generally, the hazard of tritium is low when compared to most commonly used emitters. However, the hazards of H-3 nucleic acids (thymidine being the most common) is much higher. Insufficient information is available to accurately determine the hazard, but it has been estimated as being 1000 times that of tritiated water vapor. The increase of hazard for labeled nucleic acids occurs because deposition in the human body is not uniform, the biological elimination is quite different from that of tritium oxide and the areas of deposition are unusually radiosensitive. The problem is further complicated by the fact that it is difficult to monitor for H-3 contamination, and air contamination can be detected only at relatively high levels. Virtually the entire safety of operations with this material must depend on sound technique of use.

For the above reasons, tritium should be handled and stored only in well ventilated areas. Containers of tritium should be opened in a hood so that any vapor that has collected in the container can be dispersed to the atmosphere and not into the room. Because absorption through the skin occurs quite easily, rubber gloves should be worn. If the gloved hands are exposed to large amounts of tritium oxide for prolonged periods, the gloves should be changed every 2 hours or so, because the oxide may penetrate the rubber in that period of time.

Vacuum pumps attached to a system containing tritium (or any other isotope) should be vented to a hood. Also, bear in mind that things like vacuum pump oil, stopcock grease and plastics readily become contaminated with tritium and should be carefully handled after coming in contact with tritium gas or tritiated water.

An estimate of the amount of tritium oxide contained in the body can be made by determining tritium concentration in the urine with a liquid scintillation counter. Therefore, personnel working with sufficient amounts of tritium may be required to furnish the RSO with urine sample test results. The RSO will normally make this request. However, if any person has reason to believe he has accidentally ingested material, he/she must notify the RSO at once. In the meantime, any urine samples should be saved for analysis.

Airborne tritium monitors are commercially available; the cost is in the neighborhood of $2000. It should be pointed out that sensitivity, discrimination between other gases, and calibration of these devices present problems which must be carefully evaluated by the user if the equipment is to be relied upon.

12. The survey instruments will be calibrated by Picker Corporation at least once annually.

13. The members of the Radiation Safety Committee. (Attachment II) is a copy of the members training and experience.

Charles M. Paroda, Ph. D.	Assistant Professor Microbiology
Thomas A. Thesing, D. O.	Associate Professor Family Practice
John W. Chambers, Ph. D.	Professor Pharmacology
David E. Crandall, Ph. D.	Assistant Professor Biochemistry
Charles A. Roberts, Ph. S.	Associate Professor Anatomy
Anne Hooper, M. D.	Associate Professor Pathology
Robert J. Gronan, Ph. D.	Assistant Professor Physiology

If further information is required please feel free to write or call.

Sincerely,

Charles M. Paroda, Ph. D.
Radiation Protection Officer

Attachment I. The following is a list of the individual authorized users. The attached forms indicate the training and experience of the users. The authorized users are:

Charles M. Paroda, Ph. D.
John Chambers, Ph. D.
David E. Crandall, Ph. D.
Larry Davis, Ph. D.
Robert J. Gronan, Ph. D.
Anne D. Hooper, M. D.
Harold E. Laubach, Ph. D.
John N. Mugaas, Ph. D.
Judith O. C. Westrik,Ph. D.

FULL NAME: Charles M. [redacted]eda, Ph. D.

TITLE: Assistant Professor

I. LICENSED MATERIAL

Element - and Mass Number	Chemical - and/or Physical Form	Name of Manufacturer and/or Model Number (if sealed source)	Maximum number of millicuries and/or sealed sources and maximum activity per source which will be possessed at any one time
Hydrogen-3	tritiated Thymidine		100 mCi
Phosphorus-32	inorganic and ATP		100 mCi

II. Describe use of licensed material:

Labeling of nucleic acid in vivo and in vitro

III. Type of Training	Where Trained	Duration of Training	On The Job	Formal Course
a. Principles & Practices of radiation protection	California State College	1 year	YES NO	YES NO
b. Radioactivity measurement, standardization & monitoring techniques & instruments	California State College	1 year	YES NO	YES NO
c. Mathematic & calculations, basic to use & measurements of radioactivity	California State College	1 year	YES NO	YES NO
d. Biological effects of radiation	California State College	1 year	YES NO	YES NO

IV. Experience with Radiation (actual use of radioisotopes)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
Hydrogen-3	10-100 mCi	West Virginia University	3 years	labeling of
		University of Co.	2 years	
Phosphorus-32	50 mCi/Exp.	University of Colorado	2 years	nucleic acds
		and St. Louis Univ.	1 year	in vitro
Iodine 129	10mCi/Exp.	University of Colorado	2 years	and
		St. Louis University	1 year	in vivo
Hydorgen-3	10-100mCi/Exp	St. Louis University	1 year	

FULL NAME: John Chambers

TITLE: Professor Pharmacology

I. LICENSED MATERIAL

Element - and Mass Number	Chemical - and/or Physical Form	Name of Manufacturer and/or Model Number (if sealed source)	Maximum number of millicuries and/or sealed sources and maximum activity per source which will be possessed at any one time
^{14}C		New England Nuclear	
^{14}C	amino acids protein nucleotides	"	1 millicurie

II. Describe use of licensed material:

Investigation of transport, metabolism of labeled substrate by isolated perfused liver in sealed system

III. Type of Training	Where Trained	Duration of Training	On The Job	Formal Course
a. Principles & Practices of radiation protection	Vanderbilt University	2 years	(YES) NO	YES NO
b. Radioactivity measurement, standardization & monitoring techniques & instruments	"	"	(YES) NO	YES NO
c. Mathematic & calculations, basic to use & measurements of radioactivity	"		(YES) NO	YES NO
d. Biological effects of radiation	"		YES NO	(YES) NO

IV. Experience with Radiation (actual use of radioisotopes)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
^{14}C	1 millicurie	Vanderbilt U Med. Col. Va.	8 years 5 years	Research "

FULL NAME: David E Crandall

TITLE: Assistant Professor of Biochemistry

I. LICENSED MATERIAL

Element - and Mass Number	Chemical - and/or Physical Form	Name of Manufacturer and/or Model Number (if sealed source)	Maximum number of millicuries and/or sealed sources and maximum activity per source which will be possessed at any one time
Carbon - 14	Any [^{14}C]$NaHCO_3$ and amino acids, purines and pyrimidines, and intermediates	and "Cand ^{3}H - labeled of nitrogen metabolism.	75 millicuries
Hydrogen - 3	Any		10 millicuries

II. Describe use of licensed material:

To be used in the study of nitrogen metabolism, including enzyme assays and studies in tissue slices and cultured cells.

III. Type of Training	Where Trained	Duration of Training	On The Job	Formal Course
a. Principles & Practices of radiation protection	University of Rhode Island	10 years	(YES) NO	(YES) NO
b. Radioactivity measurement, standardization & monitoring techniques & instruments	"	"	(YES) NO	(YES) NO
c. Mathematic & calculations, basic to use & measurements of radioactivity	"	"	(YES) NO	(YES) NO
d. Biological effects of radiation	"	"	(YES) NO	(YES) NO

IV. Experience with Radiation (actual use of radioisotopes)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
^{14}C	5 mCi/experiment	University of Rhode Island	10 years	Use as biochemical tracer
^{3}H	1 mCi/expt.	"	10 years	"

FULL NAME: Larry Davis

TITLE: Assistant Professor

I. LICENSED MATERIAL

Element - and Mass Number	Chemical - and/or Physical Form	Name of Manufacturer and/or Model Number (if sealed source)	Maximum number of millicuries and/or sealed sources and maximum activity per source which will be possessed at any one time
^{14}C	organic chemicals used for labeling biological membranes		10 millicuries
^{3}H			"
^{32}P	inorganic phosphate		50 millicuries

II. Describe use of licensed material:

III. Type of Training	Where Trained	Duration of Training	On The Job	Formal Course
a. Principles & Practices of radiation protection	Oklahoma STATE University	1 year	(YES) NO	(YES) NO
b. Radioactivity measurement, standardization & monitoring techniques & instruments	University of North Carolina	3 years	(YES) NO	(YES) NO
c. Mathematic & calculations, basic to use & measurements of radioactivity	University of North Carolina	3 year	(YES) NO	YES NO
d. Biological effects of radiation			YES NO	YES NO

IV. Experience with Radiation (actual use of radioisotopes)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
^{14}C	10 mC	Univ. of N.C. Chapel Hill	2 years	Tracers in animal and in vitro biochemistry research
^{3}H	5 mC			
^{14}C	50 mC	Oregon State University	4 years	
^{32}P	1 mC			
^{14}C	1 mC	Oklahoma State University	2 years	

12/18/79

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FULL NAME: ROBERT J. GRONAN, Ph.D.

TITLE: ASSISTANT PROFESSOR OF PHYSIOLOGY

I. LICENSED MATERIAL

Element - and Mass Number	Chemical - and/or Physical Form	Name of Manufacturer and/or Model Number (if sealed source)	Maximum number of millicuries and/or sealed sources and maximum activity per source which will be possessed at any one time
H^3	S-adenosyl-L-Methionine (^3H-Methyl)	Upjohn Cata-kit (Catecholamine radioenzymatic assay kit	1. mCi

II. Describe use of licensed material:

^3H-SAM is used as a methyl donor in an enzymatic reaction involving the degradation of catecholamines. The tritiated metabolic products are separated by thin-layer chromatography and measured in a scintillation counter.

III. Type of Training	Where Trained	Duration of Training	On The Job	Formal Course
a. Principles & Practices of radiation protection	University of Louisville	Several months:	(YES) NO	YES (NO)
b. Radioactivity measurement, standardization & monitoring techniques & instruments	"	However, I need a refresher course before using this assay.	(YES) NO	(YES) NO
c. Mathematic & calculations, basic to use & measurements of radioactivity	"		(YES) NO	(YES) NO
d. Biological effects of radiation	"		(YES) NO	(YES) NO

IV. Experience with Radiation (actual use of radioisotopes)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
H^3	?	Univ. Louisville	Several months	Biochemical separation: scintillation counting.
C^{14}	?			

FULL NAME: Anne D Harper, MD

TITLE: Pathologist (Associate Professor of Pathology)

I. LICENSED MATERIAL

Element - and Mass Number	Chemical - and/or Physical Form	Name of Manufacturer and/or Model Number (if sealed source)	Maximum number of millicuries and/or sealed sources and maximum activity per source which will be possessed at any one time
Fe^{59} for research	$FeSO_4$		

II. Describe use of licensed material: iron turnover studies

III. Type of Training	Where Trained	Duration of Training	On The Job	Formal Course
a. Principles & Practices of radiation protection	Doctors Hosp Washington, DC	total 2 wks all day + evening covering all this material	YES NO	(YES) NO
b. Radioactivity measurement, standardization & monitoring techniques & instruments	"		YES NO	(YES) NO
c. Mathematic & calculations, basic to use & measurements of radioactivity	"		YES NO	(YES) NO
d. Biological effects of radiation	"		YES NO	(YES) NO

IV. Experience with Radiation (actual use of radioisotopes)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
Cr^{51}	few micro curies	VA Hosp Centerville Pa	2 years	labeling blood for RBC survival and blood volumes
Co^{60}	"	Centerville Hosp, Centerville, Pa	1 year	labeling bile
I^{131}	"	BARH, Beckley W V	2 yrs	thyroid function tests

FULL NAME: Harold Edward Laubach, Ph.D.

TITLE: Assistant Professor and Acting Chairman, Department of Microbiology, WVSOM

I. LICENSED MATERIAL

Element - and Mass Number	Chemical - and/or Physical Form	Name of Manufacturer and/or Model Number (if sealed source)	Maximum number of millicuries and/or sealed sources and maximum activity per source which will be possessed at any one time
Chromium-51	Sodium Chromate in Sodium Chloride Solution, Sterilized	Amersham 2636 S. Clearbrook Dr. Arlington Heights, IL 60005 (800) 323-9750	20 millicuries=maximum at any one time Activity = 100-400 mCi/mg Cr

II. Describe use of licensed material:

The Chromium-51 will be used to label infectious agents, in vitro, and then the release of the Chromium-51 from the infectious agents will be monitored when the suspension is treated with inflammatory cells, in vitro.

III. Type of Training	Where Trained	Duration of Training	On The Job	Formal Course
a. Principles & Practices of radiation protection	University of Alabama, Bham Alabama	40 hours	YES NO	XXX YES NO
b. Radioactivity measurement, standardization & monitoring techniques & instruments			YES NO	YES NO
c. Mathematic & calculations, basic to use & measurements of radioactivity	Oklahoma State University	3 hour course	YES NO	XXX YES NO
d. Biological effects of radiation			YES NO	YES NO

IV. Experience with Radiation (actual use of radioisotopes)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
Chromium-51	20 millicuries	University of Alabama, Bham, Alabama	1 1/2 years	Same as described in II.

FULL NAME: John N. Mugaas

TITLE: Assistant Professor of Physiology

I. LICENSED MATERIAL

Element - and Mass Number	Chemical - and/or Physical Form	Name of Manufacturer and/or Model Number (if sealed source)	Maximum number of millicuries and/or sealed sources and maximum activity per source which will be possessed at any one time
Sodium - 24	NaCl	?	?

II. Describe use of licensed material:
Ion balance studies in renal physiology

III. Type of Training	Where Trained	Duration of Training	On The Job	Formal Course
a. Principles & Practices of radiation protection	Moorhead State University	2 weeks Oak Ridge Associated Univ. Course Oct. 7-18, 1968	YES (NO)	(YES) NO
b. Radioactivity measurement, standardization & monitoring techniques & instruments	Moorhead State University	2 weeks Oak Ridge Associated Univ Course. Oct. 7-18, 1968	YES (NO)	(YES) NO
c. Mathematic & calculations, basic to use & measurements of radioactivity	Moorhead State University	2 weeks Oak Ridge Associated Univ. Course. Oct. 7-18, 968	YES (NO)	(YES) NO
d. Biological effects of radiation	Moorhead State University	Oak Ridge Associated Univ. Course, Oct. 7-18, 1968 2 weeks	YES (NO)	(YES) NO

IV. Experience with Radiation (actual use of radioisotopes)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
Carbon-14	20 μCi	Southwestern at Memphis	1 week/year for 3 years	General biology laboratory work on C^{14} uptake by plant leaves.

FULL NAME: Julia C.C Westerik

TITLE: Assistant Professor

I. LICENSED MATERIAL

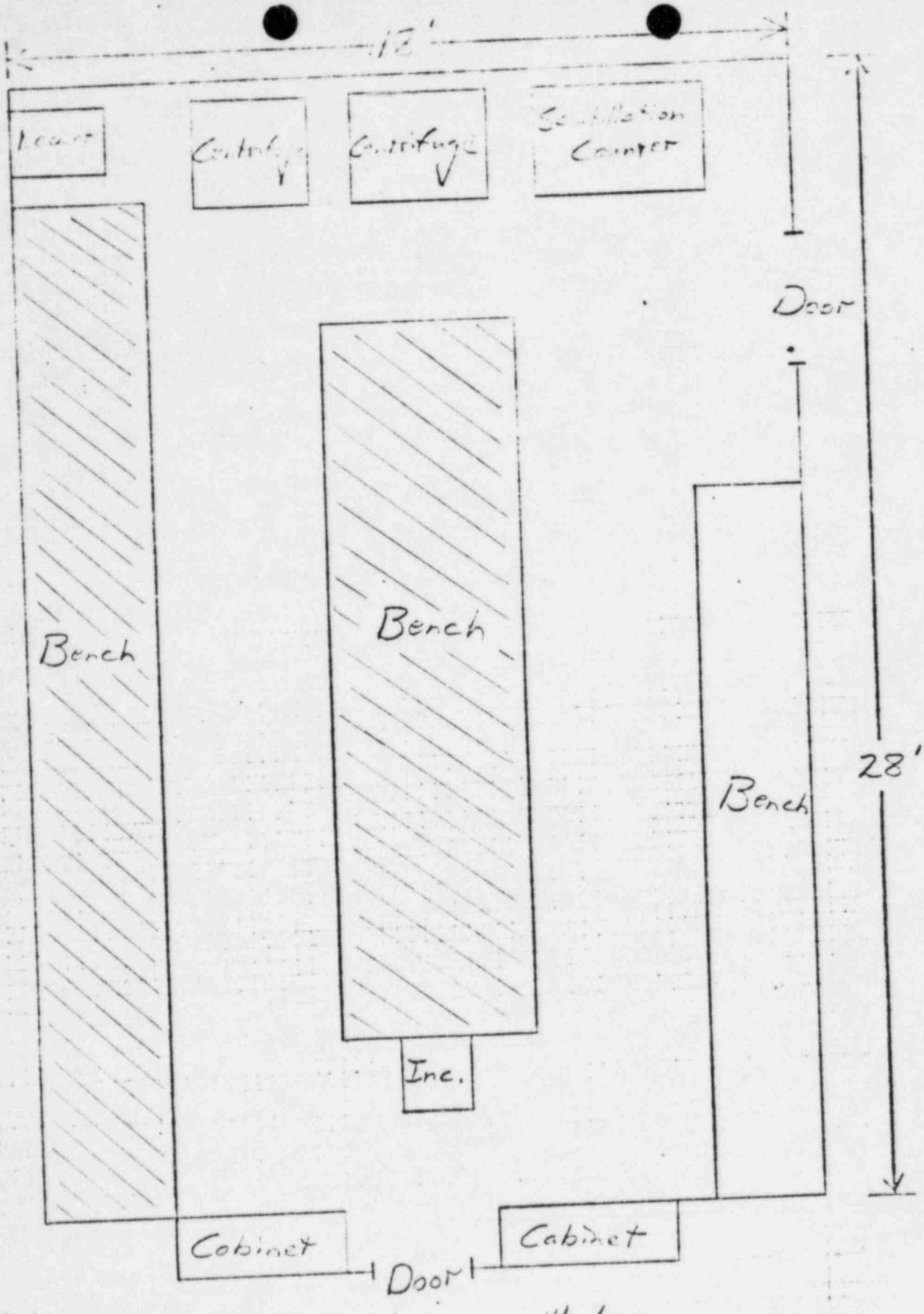
Element - and Mass Number	Chemical - and/or Physical Form	Name of Manufacturer and/or Model Number (if sealed source)	Maximum number of millicuries and/or sealed sources and maximum activity per source which will be possessed at any one time
Co^{57}	Salt soln(?)	ICN	≈1 millicurie

II. Describe use of licensed material:

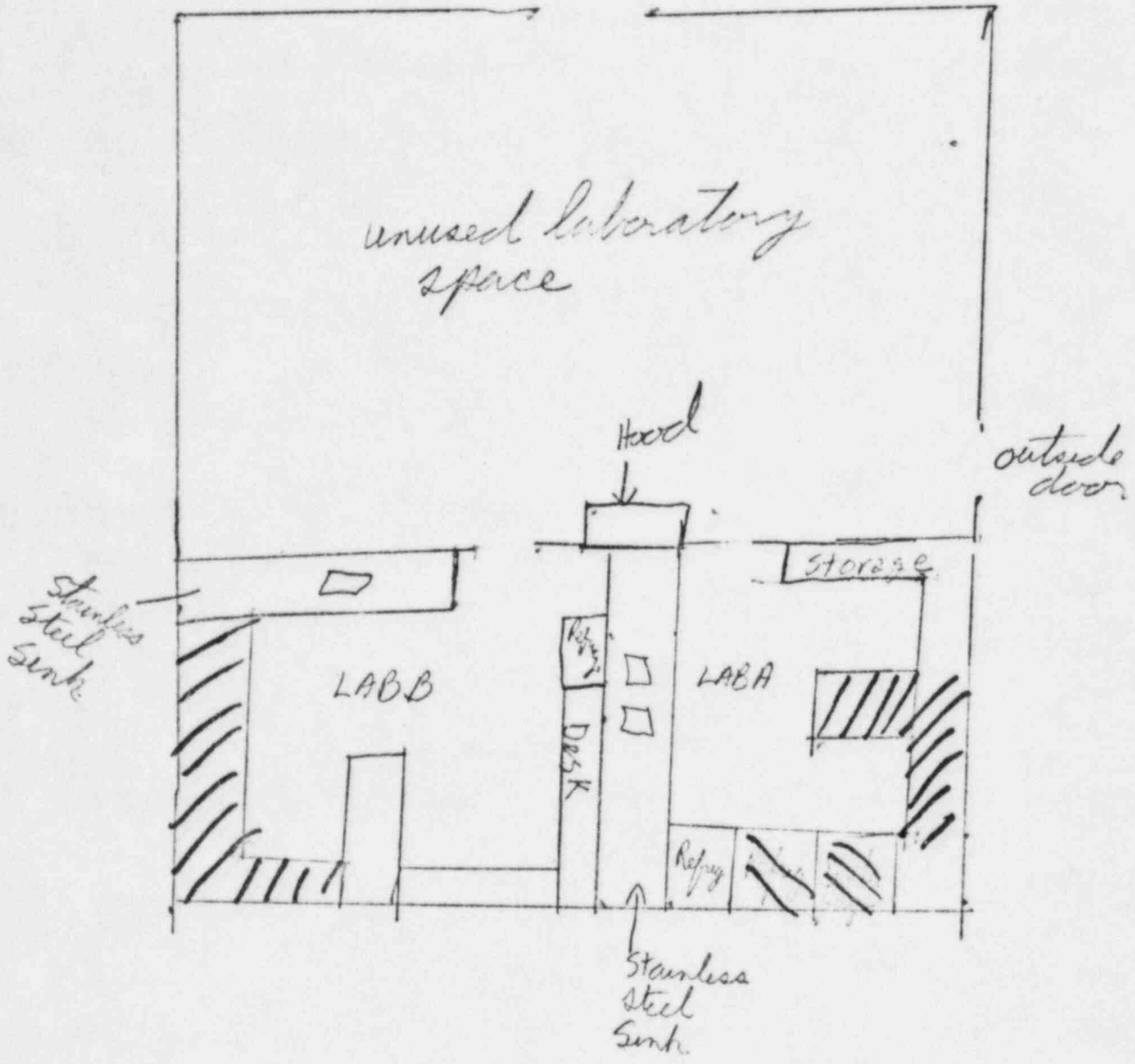
III. Type of Training	Where Trained	Duration of Training	On The Job	Formal Course
a. Principles & Practices of radiation protection			YES NO	YES NO
b. Radioactivity measurement, standardization & monitoring techniques & instruments	No formal training		YES NO	YES NO
c. Mathematic & calculations, basic to use & measurements of radioactivity			YES NO	YES NO
d. Biological effects of radiation			YES NO	YES NO

IV. Experience with Radiation (actual use of radioisotopes)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
Na^{63}	micro curies per exp.	Research Institute Hosp for Sick Children Toronto, Ont Canada	≈1.5 yrs.	Tracer equilibrium dialysis



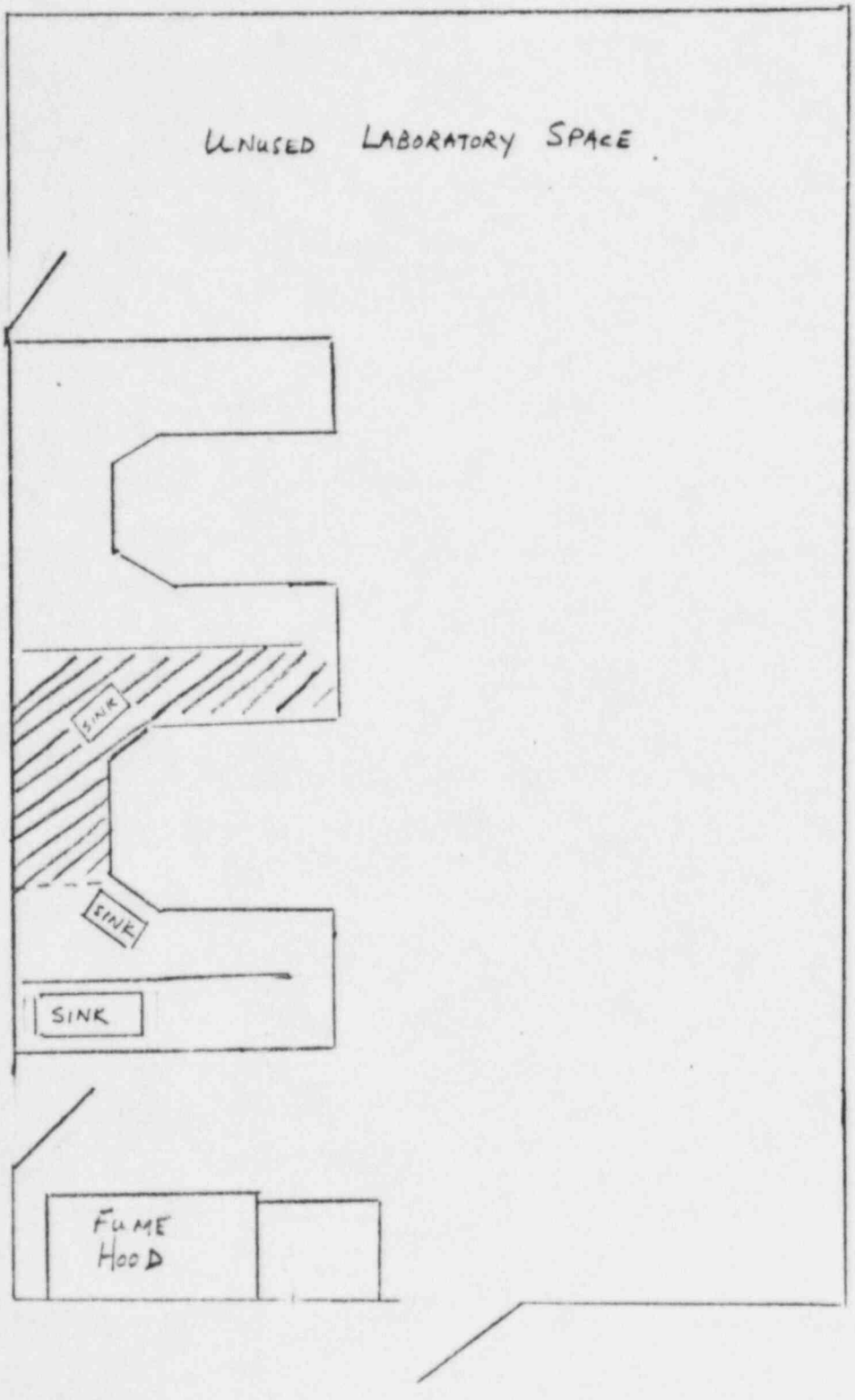
Areas where isotopes will be used are shaded



MICROBIOLOGY RESEARCH LABS

1. Walls are 4-6 inches of wallboard/plas
2. Radioisotopes will be stored in lead pigs in specified refrigerator
3. All work will be done in hoods or behind plexiglass shields

Laboratory Room B-321



CURRICULUM VITAE

NAME: Charles M. Paroda

PERSONAL DATA:

Date of Birth: March 14, 1944
Citizenship: U.S.A.
Martial Status: Married, 1 child

MAILING ADDRESS AND PHONE NUMBER:

Work: Department of Microbiology
West Virginia School of Osteopathic Medicine
400 N. Lee Street
Lewisburg, WV 24901 (304) 645-6220

Home: 823 Pocahontas Ave.
Ronceverte, WV 24970 (304) 645-7667

EDUCATIONAL BACKGROUND:

B.S. California State College, California, PA
Biology - May, 1966

M.S. California State College, California, PA
Biology - May, 1973
Masters Thesis: The Effect of an Inhibitor from Quackgrass (Agronpyron repens, L. Beauv.) Rhizomes on the Roots of Corn and Cucumber Seedlings

Ph.D West Virginia University, Morgantown, WV 26506
Genetics - September, 1976
Dissertation: The Origin of the B Genome in Wheat Employing Nucleic Acid Hybridization

PROFESSIONAL EXPERIENCE:

1966-1971 Teacher, Montgomery County High School, Board of Education, Rockville, MD

1971-1973 Teaching Assistant. California State College, California, PA

1973-1975 Teaching Assistant. West Virginia University, Morgantown, WV

1976-1978 Postdoctoral Fellow (Donald J. Cummings, Sponsor). University of Colorado Medical Center, Denver, CO

1978-~~Present~~ 1984 Research Associate (Maurice Green, Sponsor). Institute for Molecular Virology, St. Louis University Medical Center, St. Louis, MO 63110

1984-Present Assistant Professor WVSOM

PUBLICATIONS:

Nath, J. and C. M. Paroda. A Low Temperature Method for Obtaining High Yields of DNA from Plant Tissues; Presented at the Society for Cryobiology - 12 Annual Meeting in Washington, D.C., August 1975, Cryobiology: Journal of Low Temperature Biology and Medicine (12), 583-584, 1975.

Cummings, D.J., R. A. Maki and C. M. Paroda, Restriction Mapping and Interspecied Homology of Mitochondrial DNA from Paramecium in Specific Eucaryotic Genes: Structural Organization and Function, J. Enbery, H. Klenow, V. Leick, J. H. Thaysen (ed.) The Alfred Benzon Symposium 13 (1978).

Cummings, D. J., R. A. Maki, C. M. Paroda and A. Pritchard. Restriction Mapping and Interspecies Homology of Mitochondrial DNA from Parameciums. ICN-UCLA symposium (1979)

REFERENCES: Paroda, C.M. The separation of Adenovirus DNA 5' covalently bound protein, West Virginia Academy of Science. (1980

Joginder Nath, Ph.D
Plant Science Division
Agricultural Science Building
West Virginia University
Morgantown, WV 26506

Walter J. Kaczmarczyk, Ph.D
Plant Science Division
Agricultural Science Building
West Virginia University
Morgantown, WV 26506

William Gabor, Ph.D
Biology Department
California State College
California, PA

Maurice Green, Ph.D
St. Louis University Medical Center
Institute for Molecular Virology
3681 Park Avenue
St. Louis, MO 63110

PROFESSIONAL SOCIETIES:

American Association for the Advancement of Science

RESEARCH EXPERIENCE SUMMARY:

My research field is molecular biology, specifically the are of the molecular biology of nucleic acids. I have experience with nucleic acids from viruses, bacteria, procaryotes and eucaryotes.

RESEARCH ASSOCIATE
Institute for Molecular Virology

I am currently investigating the interaction of certain early viral proteins and viral DNA. The major approach is to utilize DNA sequencing to determine specific DNA sequences to which early proteins associate. This work entails tissue culture and the recovery of DNA with native protein attached to the DNA. An alternate technique is to isolate the protein and the DNA separately and to reconstruct the DNA-protein complex *in vitro*.

POST-DOCTORAL FELLOW
University of Colorado Medical Center

I worked on restriction enzyme mapping and nucleic acid hybridization techniques to determine homology of mitochondrial DNA from selected species of *Paramecium aurelia*. The hybridization techniques utilized was Southern Blotting of mt DNA with treated endonucleases and subsequent hybridization with labeled DNA and r-RNA, and heteroduplex formation for electron microscopy.

I also have experience in the area of recombinant DNA. I successfully cloned the r-RNA genes of *Paramecia* mt DNA in a lambda phage. The lambda phage had a 22% deletion which allowed the incorporation of a large exogenous DNA fragment. The recombinant DNA was packaged *in vitro* by utilizing extracts from 2 lambda mutants which were both excision mutants but one had a mutuation in the A gene head protein and the other had a mutuation in the D head protein gene. Using the *in vitro* packaging, recombinant DNA was preferentially packaged into viable phage.

Ph.D RESEARCH
West Virginia University

I employed *in vitro* nucleic acid hybridization and hydroxylapatite thermal chromotography to detect the degree of relatedness of various species of diploid wheat to the modern tetraploid and hexaploid wheat. My major interest was to find the most likely parent of the B genome from among 3 diploid species. I was able to determine that one of the 3 species examined was a more likely donor of the B genome than the other two.

M.S. RESEARCH
California State College

(Plant Physiology Training). I studied the effect of a natural growth inhibitor produced by quackgrass on the anatomical and morphology of the roots of corn and cucumber. The inhibitor at all concentrations tested had significant effects.

SECTION II – PRIVILEGED COMMUNICATION

BIOGRAPHICAL SKETCH

(Give the following information for all professional personnel listed on page 3, beginning with the Principal Investigator. Use continuation pages and follow the same general format for each person.)

NAME	TITLE	BIRTHDATE (Mo., Day, Yr.)
Robert J. Gronan	Ph.D.	9-4-45 0934
PLACE OF BIRTH (City, State, Country)	**PRESENT NATIONALITY (If non-U.S. citizen, indicate kind of visa and expiration date)**	**SEX**
Staten Island, New York, U.S.A.	U.S.	☒ Male ☐ Female

EDUCATION *(Begin with baccalaureate training and include postdoctoral)*

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	SCIENTIFIC FIELD
McGill University, Montreal, Quebec, Canada	B. Sc.	1967	Chemistry/Psychology
University of Louisville, Louisville, Ky.	M.A.	1972	Psychology
University of Louisville, Louisville, Ky.	Ph.D.	1975	Pharmacology/Psychology
University of Missouri, Columbia, Missouri	Postdoctoral	1976-1978	Physiology

HONORS

American Psychological Assn., Division of Psycho-pharmacology, Student Research Grant, 1972

MAJOR RESEARCH INTEREST	ROLE IN PROPOSED PROJECT
Neurophysiology	Principal Investigator

RESEARCH SUPPORT *(See instructions)*

RESEARCH AND/OR PROFESSIONAL EXPERIENCE *(Starting with present position, list training and experience relevant to area of project. List all or most representative publications. Do not exceed 3 pages for each individual.)*

University of Missouri: Training in neurophysiology, including single unit recording and analysis, microelectrophoresis, blood pressure recording techniques and intraventricular canulation.

University of Louisville: Neuropsychopharmacology Program (major research for M.A. conducted in Dept. Psychology, for Ph.D. conducted in Dept. Pharmacology)

Basic Medical Science courses, psychology courses, advanced courses in pharmacology, psychology, biochemistry and other areas.

Training in physiological psychology, including animal handling and behavioral analysis, water ingestion studies, stereotoxic implantation of intracerebral cannula in rats, use of chronic intravenous and intraarterial catheters.

Statistical analysis using Fortran and Basic computer programming, use of PDP-9 computer.

Training in neuropharmacology, including drug administration and behavioral analysis, neurochemical analysis by fluorometric and radioisotopic methods using mice, rats.

U.S. Army Medical Research Laboratory, Fort Knox, Ky. (civilian graduate research assistant): Neurophysiology of vision including stereotoxic electrode surgery in cats and monkeys, evoked potential recording.

NIH 398 (FORMERLY PHS 398)
Rev. 1/73

U. S. GOVERNMENT PRINTING OFFICE : 1974

C U R R I C U L U M V I T A E

0934

ANNE D. HOOPER, M.D.

GENERAL:

Born July 16, 1926, Groton, Massachusetts. Attended second grade through high school in University City, Mo., except for eighteen months in Guatemala and Costa Rica in 1941-2. Married to W. Dale Hooper, M.D., June 17, 1952 (maiden name- Anne Caroline Dodge).

EDUCATION:

HIGH SCHOOL: University City High School, University City, Mo. 1943

COLLEGE: A.B., 1947, Washington University, St. Louis, Mo.

MEDICAL SCHOOL: M.D., 1952, Washington University, St. Louis, Mo.

RESEARCH: Jackson-Johnson Research Fellowship, Department of Pharmacology, Washington University School of Medicine, 1949-50

INTERNSHIP: Rotating, 1952-3, Virginia Mason Hospital, Seattle, Washington

RESIDENCIES: Internal Medicine, 1953-4, St. Francis Hospital, Hartford, Connecticut

Pathologic Anatomy and Clinical Pathology, 1954-7, New Britain General Hospital, New Britain, Connecticut

Pathologic Anatomy and Clinical Pathology, 1957-8, Presbyterian Hospital, Philadelphia, Pennsylvania

Forensic Pathology, 1958-60, Office of the Medical Examiner, Philadelphia, Pa.

BOARD CERTIFICATION:

American Board of Pathology:	Pathologic Anatomy	1958
	Forensic Pathology	1960
	Clinical Pathology	1961

LICENSES:

State: Missouri No. 25491, Pennsylvania No. 5049E, Vermont No. 3152, Kentucky No. 15972, West Virginia No. 9565

Also licensed by Atomic Energy Commission as Director of Radioisotope Laboratory, Coatesville Hospital, Coatesville, Pa. 1963, and V.A. Hospital Coatesville, Pa. 1965.

(Curriculum Vitae - Anne D. Hooper, M.D. - Continued)

POSITIONS:

Director of Radioisotope Laboratory, Coatesville Hospital, Coatesville, Pennsylvania, 1963

Consultant in Pathology, Veterans Administration Hospital, Coatesville, Pennsylvania, 1964-6

Acting Chief of Laboratory Service, Veterans Administration Hospital, Coatesville, Pennsylvania, 1966

Director of Laboratory, St. Albans Hospital, St. Albans, Vermont, 1966-9

Director of Laboratory, Kerbs Memorial Hospital, St. Albans, Vermont, 1966-71

Regional Medical Examiner, Franklin and Grand Isle Counties, Vermont, 1968-71

Director of Laboratory, Williamson Appalachian Regional Hospital, South Williamson, Kentucky, 1971-4

Director of Laboratory, McDowell Appalachian Regional Hospital, McDowell, Kentucky 1971-6

Director of Laboratory Morgan County Appalachian Regional Hospital, West Liberty, Kentucky, 1973-6

Regional Medical Examiner, Kentucky, 1973

Pathologist, Beckley Appalachian Regional Hospital, Beckley, W. Va. 1974-5

Director of Laboratory, Beckley Appalachian Regional Hospital, Beckley, W. Va., 1975-6

Pathologist, Man Appalachian Regional Hospital, 1974-6

Medical Examiner Raleigh County 1976---

Assistant Professor of Pathology, West Virginia School of Osteopathic Medicine, 1977-8

Associate Professor of Pathology, West Virginia School of Osteopathic Medicine, 1978---

(Curriculum Vitae - Anne D. Hooper, M.D. - Continued)

HONORS AND PROFESSIONAL SOCIETIES:

Borden Award for best undergraduate research in graduating class of 1952, Washington University, St. Louis, Mo.

Phi Beta Kappa, 1947, Washington University, St. Louis, Mo.

Associate Membership, Sigma Xi, 1947, Washington University, St. Louis, Mo.

Full Membership, Sigma Xi, 1952, Washington University, St. Louis, Mo.

Fellow of College of American Pathologists, 1963--

Fellow of the American Society of Clinical Pathologists, 1960--

Fellow of the American Academy of Forensic Sciences, 1972--

Member, International Academy of Pathology, 1960--

Member, Raleigh County Medical Society, West Virginia State Medical Society, American Medical Association

Member, West Virginia Association of Pathologists, 1975--

PART TIME FACULTY APPOINTMENTS:

Assistant, Department of Pathology, University of Pennsylvania, 1957-8

Visiting Lecturer, Forensic Pathology, Jefferson Medical College, Philadelphia, Pa. 1959-64

Instructor, Department of Pathology, University of Vermont, Burlington, Vermont, 1967-71

PUBLICATIONS:

Dodge, Anne C., A TEST FOR PREGNANCY BASED ON THE HISTAMINOLYTIC ACTIVITY OF SERUM
Am. J. Ob.and Gyn., 63, 1213-1222, 1952

Hooper, Anne D., ACQUIRED TOXOPLASMOSIS: REPORT OF A CASE WITH AUTOPSY FINDINGS, INCLUDING A REVIEW OF THE PREVIOUSLY REPORTED CASES
A.M.A. Arch. of Path., 64, 1-9, 1957

Yamour, B. and Hooper, Anne D., CLINICAL CASE: SIDEROBLASTIC ANEMIA
Consultant, 105-115, July 1977

Hooper, Anne D., FEBRILE TRANSFUSION REACTIONS DESPITE COMPATIBLE CROSS MATCHES
J. of the Kentucky Med. Assoc. 75, 486-488, 1977

(Curriculum Vitae - Anne D. Hooper, M.D. - Continued)

PUBLICATIONS (cont.):

Hooper, Anne D., RENAL ADENOCARCINOMA COMPLICATED BY CLOSTRIDIUM PERFRINGENS (GAS GANGRENE) MYOCARDITIS
W. Va. Med. J., 74, 184-188, 1978

Hooper, A.D., A NEW APPROACH TO UPPER CERVICAL INJURIES
Journal of Forensic Sciences, 24, 39-48, 1979

CURRICULUM VITAE

Charles Allan Roberts

0934

BORN: Waynesburg, Pennsylvania; July 12, 1944.

MARITAL STATUS: Wife: Ernice Roberts
Children: Rachel 11
Allan 10
Neil 8

PRESENT POSITION: Associate Professor, Department of Anatomy, West Virginia School of Osteopathic Medicine.

ADDRESS

400 North Lee Street
Lewisburg, West Virginia 24901

TELEPHONE

(304) 645-6270 Ext. 228-A

SCHOLASTIC TRAINING:

Undergraduate College	Major	Degree	Date
Waynesburg College, Waynesburg, Pennsylvania	Biology	B.S.	1966
Graduate School			
West Virginia University Morgantown, West Virginia	Anatomy (Neuroscience)	Ph. D.	1971

TEACHING EXPERIENCE:

Place	Rank	Dates	Subjects Taught
Trinity High School	Teacher Wrestling Coach	1967	Biology
West Virginia Univ. Medical School	Teaching Assistant	1968-71	Gross Anatomy, Histology, Embryology Neuroanatomy
Tulane Medical School	Assistant Professor	1971-76	Neuroscience, Advanced Neurochemistry, Histology, Neuro-psycho-pharmacology, Neurophysiology, Gross Anatomy, Advanced Graduate Courses
West Virginia School of Osteopathic Medicine	Associate Professor	1976 - present	Histology System Neurosensory System

Charles Allan Roberts

TEACHING HONORS:

Place	Date	Award
Waynesburg College	1966	Teaching excellence in Biology
Tulane Medical School	1975-76	Teaching excellence in Neuro
West Virginia School of Osteopathic Medicine	1978	Teaching excellence

RESEARCH EXPERIENCE:

Single cell unit recording from CNS cortices of the squirrel monkey, rat and frog done in collaboration with Dr. Norman Kreisman, Tulane Medical School; 1971-1976.

Neurochemistry of schizophrenia and related disorders in human subject done in collaboration with Drs.Heath and Gary, Tulane Medical School; 1974-1976.

Neuropharmacological study of a potential new antiepileptic drug (Uridine) in human subjects done in collaboration with Dr. Jeffry Ellison, Tulane Medical School, Ochsner Institute, 1975-1976.

Participant in National Institute of Health Research Program to study potential new anticonvulsant drugs and their clinical application, - 1974 - present.

CNS degeneration studies using FinkHeimer and Nauta Gygax technique.

Autoradiographic studies of lens regeneration.

Electron microscopy (transmission) - Epilepsy and Cerebral Trauma
Autoradiographic Tracer Studies - Epilepsy and Antimetabolites
Fluorescence Microscopy - Transmitters and Epilepsy
Horseradish Peroxidase Tracer Studies - Epilepsy and the Mirror Focus Phenomena; Tracing Visceral Afferents of the Vagal System.
Electroencephalographic Recording - Human and Animal Studies.
Steroatoxic Surgical Procedures - Animal (cat, monkey, rat, frog) Observation of human implants for alleviation of intractable pain. Limbic and cerebellar epilepsy.

Biochemical Techniques - 1) Synaptosome isolation.
2) DNA-RNA-Protein isolation.
3) Column chromatography.
4) Amino acid analyses.
5) Liquid scintillation.
6) Neurotransmitter isolation - GABA.

Charles Allan Roberts

ADMINISTRATIVE EXPERIENCE:

Teaching - Research Related

Major Research Advisor for Louisiana Heart Association, 1974-76.
Research Preceptor Advisor for 23 graduate and/or medical students, 1971-76.

Major Research Advisor for students participating in summer enrichment programs for minority students accepted to medical school, 1973-76.

Major Advisor for Masters Degree, Department of Anatomy, Tulane (3 students).

Major Advisor for Ph. D. Degree, Department of Anatomy, Tulane (2 students).

Major Advisor for M.D. - Ph. D., combined degree, Tulane (1 student).

Research Advisor for 9 students (Ph. D. candidates) outside Department of Anatomy, Tulane

Director of Histology Technique Lab at West Virginia School of Osteopathic Medicine

Curriculum Related

Tulane Medical School

Admissions
Human Subjects and Research
Neuroscience

West Virginia School of Osteopathic Medicine

Director of Neurosensory System
Director of Histology System - Responsible for coordination and integration of basic science and clinical presentations of these two systems throughout the first two years of medical school, 1976 - present.

Participating Member of the following, 1977 - present.

Admissions Committee
Curriculum Committee
Clinical Training Committee
Committee for Academic Affairs
Educational Resources Committee
Grievance Committee

Charles Allan Roberts

Faculty Representative - Advisory Council to West Virginia Board of Regents, 1978 - present.

RESEARCH PUBLICATIONS:

Roberts, C. A., "Autoradiographic and Histochemical Analyses of 5-H^3- Uridine Incorporation into Forebrain Neuronal Nuclear RNA of Normal and Epileptic Frogs (Rana catesbienna)". The Anatomical Record, Vol. 169, Number 2.

Roberts, C. A., "Anticonvulsant Effects of Uridine; Comparative Analyses of Metrazol and Penicillin Induced Foci", Brain Research, Vol. 55, 1973, pp. 291-308.

Roberts, C. A., Waltman, M. and Kreisman, N. R., "Uridine Anticonvulsant Effects; Selective Control of Nucleoside Incorporation in Experimental Epilepsy", Epilepsia, 1974, pp. 479-500.

Roberts, C. A., Lecture and Laboratory Manuals for Histology and Neuroscience Systems.

PROFESSIONAL SOCIETIES:

American Association of Anatomists
Society for the Advancement of Neuroscience
American Epilepsy Society
Sigma XI

CURRICULUM VITAE

David E. Crandall
Route 3, Box 33B
Clintonville, West Virginia 24901

Personal

Born: January 6, 1942
Married, with two children

Present Position

Assistant Professor, Department of Biochemistry
West Virginia School of Osteopathic Medicine
Lewisburg, West Virginia 24901

Education

Harvard College	B.A. in Biochemical Sciences, March, 1965
University of Rhode Island	Ph.D. in Oceanography, June, 1975

Ph.D. Thesis

Pyrimidine Metabolism and Its Regulation in the Sea Urchin (Arbacia punctulata)

Experience and Employment

Position	Institution	Dates
Marine technician	Scripps Institution of Oceanography	1961 Summers of 1962 and 1963 1964-1965
Trainee	Fertilization and Gamete Physiology Training Program, Marine Biological Laboratory Woods Hole, Massachusetts	1968
Instructor in Oceanography	University of Rhode Island	1970-73
Resource Analyst	University of Rhode Island Coastal Resources Center	1973-1974
Research Associate	University of Rhode Island Department of Biochemistry	1974-1975
Assistant Professor	University of Rhode Island Department of Biochemistry and Biophysics	1975-1978
Assistant Professor	West Virginia School of Osteopathic Medicine Department of Biochemistry	1978-present

Publications

Tremblay, G.C., Jimenez, U., and Crandall, D.E., Pyrimidine biosynthesis and its regulation in the developing rat brain. J. Neurochem. 26:57-64 (1976).

Crandall, D.E., Tremblay, G.C., Pyrimidine biosynthesis and its regulation in embryos of the sea urchin, Arbacia punctulata. Comp. Biochem. Physiol. 55B: 571-581 (1976).

Tremblay, G.C., Crandall, D.E., Knott, C.E., and Alfant, M., Orotic acid biosynthesis in rat liver; studies on the source of carbamoylphosphate. Arch. Biochem. Biophys. 178: 264-277 (1977).

Crandall, D.E., Lovatt, C.J., and Tremblay, G.C., Regulation of pyrimidine biosynthesis by purine and pyrimidine nucleosides in slices of rat tissues. Arch. Biochem. Biophys. 188: 194-205 (1978).

Manuscript in Preparation

Studies on the capacity of rat tissues for the de novo biosynthesis of pyrimidines during fetal and neonatal development.

WEST VIRGINIA SCHOOL OF OSTEOPATHIC MEDICINE
Lewisburg, West Virginia, 24901

C U R R I C U L U M V I T A E

NAME: John William Chambers

ADDRESS: Department of Pharmacology, West Virginia School of Osteopathic Medicine

(Home): Box 315, Rt. #3, Renick, WV 24966

TELEPHONE:
(Office) 645-6270 Ext. 268 (Home) 497-2862

DATE OF BIRTH: November 7th, 1929 PLACE OF BIRTH: Richmond, Kentucky

MARITAL STATUS: Married

SPOUSE: (full name) Nancy Allen Chambers

CHILDREN: Two sons, Michael Allen and Matthew Clay

SOCIAL SECURITY NUMBER: 401-44-0143

EDUCATION:

DEGREE	DATE	INSTITUTION
Diploma	1944-47 Graduated 6-47	Model High School, Richmond, KY
B.S. with Distinction	1947-48/1957-58 Graduated 6-58	Eastern Kentucky State College
Ph. D.	1960-65 Graduated 8-65	Vanderbilt University (NIH Predoctoral Fellow 1960-65)

POSTDOCTORAL FELLOWSHIP:

U.S.P.H.S., NIH Postdoctoral Fellowship, August 1965-66

ORGANIZATIONAL ACTIVITIES:

American Society for Pharmacology and Experimental Therapeutics (1971-)
New York Academy of Sciences (1970-)
Society of the Sigma Xi (1967-)
M.C.V. Membership Committee (1975-76) (of Sigma Xi)
American Association for the Advancement of Science (1965-)
Division of Medicinal Chemistry, A.C.S. (1968-)
Division of Drug Metabolism, A.S.P.E.T. (1975-)
Editorial Consultant, American Osteopathic Association (1979-)

NAME: John W. Chambers

TEACHING APPOINTMENTS:
EMPLOYMENT:

Instructor	Pharmacology	Vanderbilt Medical School 1966-67
Assistant Professor	"	Vanderbilt Medical School 1968-70
Assistant Professor	"	Medical College of Virginia 1970-76
Associate Professor	"	West Virginia School of Osteopathic Medicine 1976
Acting Chairman	"	WVSOM 1976
Professor and Chairman	"	WVSOM 1978
Acting Chairman	Physiology	WVSOM 1978

SCIENTIFIC PAPERS:

See attached bibliography
Various papers, reports, reviews, and abstracts in Mol, Pharmacol, Endocrinology, Quart J. Stud. Alcohol, Life Sciences, Chem. Path. Parmacol., Gastroenterology, Fed. Proc., and Pharmacologist about effects of hormones and alcohol on hepatic protein metabolism.

OUTSIDE INTERESTS:

Camping and Hiking - Civil War Buff

WVSOM COMMITTEES:

Standing Committees

Admissions	1977-	
Curriculum	1976-79	
Student Promotions	1976-	Chairman 1978-80
Research	1977-79	
Grievance	1977-79	
Promotions and Tenure	1979-	Chairman 1980-
Faculty Council	1976-78	
Vice Chairman	1976-77	
Member at large	1977-78	

AD HOC Committees

Presidential Search and Screening Advisory Committee Vice Chairman	1978
Screening Committee for Associate Dean for Basic Sciences	1978
Professional Appearance Committee	1977

Systems Planning Committees

Endocrine Co-chairman 1976-78
Genitourinary Co-Chairman 1976-78
Alcoholism and Drug Abuse Co-Chairman 1976
Human Sexuality Co-Chairman 1976
Long Range Planning Curriculum Committee 1977-78

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John William Chambers, Ph.D.

The metabolic fate of the thiobarbiturates: Thiobarbital in man. M. T. Bush, P. Mazel and J. Chambers, J. Pharm. Exper. Therap. 134, 110-116, 1961.

Effects of steroids on AIB uptake by isolated perfused rat liver. J. W. Chambers and A. D. Bass, Pharmacologist, 4, No. 2: 172, 1962. (Abstract)

Direct effect of HC on AIB uptake by the isolated perfused rat liver. J. W. Chambers and A. D. Bass, Fed. Proc. 22: 271, 1963. (Abstract)

Effect of hydrocortisone on AIB uptake by the isolated perfused rat liver. Bass, A. D., J. W. Chambers and A. A. Richtarik, Life Sciences 4: 266, 1963.

Endocrine influence on amino acid transport by the isolated perfused liver. Chambers, J. W. and A. D. Bass, Fed. Proc. 24: (2) 509, 1965. (Abstract)

Endocrine influence on amino acid uptake by the isolated perfused rat liver. R. H. Georg and J. W. Chambers, J. Tenn. Acad. Sci., 40: 1965. (Abstract)

Effect of hydrocortisone and insulin on uptake of aminoisobutyric acid by the isolated perfused rat liver. J. W. Chambers, Georg, R. H. and Bass, A. D., Mol. Pharmacol. 1, 66-76, 1965.

Inhibition by ethanol of the uptake of amino isobutyric acid by the isolated perfused rat liver. Chambers, J. W. and A. D. Bass, Fed. Proc. 25 (2) 415, 1966. (Abstract)

Inhibition of hepatic AIB uptake by ethanol. Chambers, J. W. and R. H. Georg J. Tenn. Acad. Sci., 41, 62, 1966. (Abstract)

Inhibition by ethanol of the uptake of aminoisobutyric acid by the isolated perfused rat liver. Chambers, J. W., R. H. Georg and A. D. Bass, Life Sciences 5, 2293-2300 (1966).

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The effect of an epinephrine-liberated pancreatic substance on amino acid uptake by the isolated perfused rat liver. John Chambers, Gary D. Vaughan, Karl E. Sussman and Allan D. Bass. Nashville, Tennessee and Denver, Colorado. Diabetes 17: Suppl., 320, 1968.

Effects of catecholamines and glucagon on amino acid transport in the liver. John W. Chambers, Ralph H. Georg, and Allan D. Bass. Endocrinology 83: 1185, 1968.

Effect of glucagon and cyclic 3',5' adenosine monophosphate on hepatic uptake of amino acid. J. W. Chambers and Allan D. Bass. Fed. Proc. 29: (2), 1970.

The effect of glucagon, cyclic 3',5' adenosine monophosphate and its dibutyryl derivative on amino acid uptake by the isolated perfused rat liver. J. W. Chambers, R. H. Georg, and A. D. Bass. Endocrinology 87: 366, 1970.

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Inhibition of hepatic uptake of alpha amino iosbutyric acid by ethanol: effects of pyrazole and metabolites of ethanol. Piccirillo, V.J. and J.W.Chambers. Res Comun Chem Pathol Pharmacol 13: 297-308, 1976

CURRICULUM VITAE

JAMES A. JESSEE D.O.

2477 Shalimar Lane

Orange Park, Florida 32073

0934

Date Of Birth:	12/29/31
Place:	Lancaster, Ohio
Elementary Education:	Lancaster
	St. Mary's
	High School Graduation 1950
Pre Osteopathic Education:	Ohio State University
	Graduated 6-11-54
	Degree B.A. in Anatomy
Osteopathic Medical Training:	College Of Osteopathic Med. and Surgery
	Des Moines, Iowa
	Graduated 6/6/58
	Degree D.O.
Rotating Internship:	Grand view Hospital 7/1/58 to 6/30/59
General Practice:	55 N. Main St
	Centerville, Ohio
	9/4/59 to 5/1/76
Served U.S.A.F.:	5/1/76 to 5/1/79
	Chief Primary Care Clinic
	U.S.A.F. Hosp. A.F.B.
	Portsmouth, N.H.
	Rank Lt. Col.
Professional Assocations:	American Osteopathic Assocation 1959 to Present
	Ohio Osteopathic Assocation 1959 to 1976
	American Academy G.P. 1971 to Present
	Ohio Society, A.C. G.P. 1971 to [illegible]
	Dayton District Academy Of Osteopathic Medicine
	1959 to 1976

sional Asson: Assocation of Military Physicians 1979 to 1979

Psi Sigma Alpha National Osteopathic Honory Socie

Member of Board of Trustess

Ohio Society A.C.G.P. 1971 to 1976

Member of Florida Osteopathic Medical Assn.

5-14-79 to 1-1-80

Active staff Member Grandview Hospital

7-1-59 to 5-1-76

Certification in General Practice 2-12-74 by A.C.G.P

Current Active Medical Licenses: Ohio, Texas, Florida, Iowa, Pennsylvania

Married 19 years to Karen Staas and have five lovely children

Item 8. Licensed Material

A.	B.	C.	D.
(5)Iron-51	$FeSO_4$	NA	1mCi
(6) Cobalt-57	salt	NA	1mCi
Sodium-22	salt	NA	1mCi

E. Discription of use

(5) Iron-51 Turnover studies in animals

(6) Cobalt-57 enzyme kinetic studies

(7) Sodium-22 ion balance in renal physiology (birds)